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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/660,216	09/11/2003	Sanjay George Mathias	130128	7700

7590 09/10/2008  
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EXAMINER
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KISH, JAMES M

ART UNIT	PAPER NUMBER
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3737

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09/10/2008

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.



## **DETAILED ACTION**

### ***Response to Arguments***

Applicant's arguments filed May 27, 2008 have been fully considered but they are not persuasive.

The Applicant argues that neither Dam nor Cole, Jr. describe or suggest generating a phase-delayed ECG of a heart at a second phase based on a time-delayed first ECG. Further, neither of these references describe or suggest determining if a first phase is within a predetermined time of a second phase. The Examiner respectfully disagrees. Paragraph 4 of the current application states, "introducing a time delay into the first ECG to generate a phase-delayed ECG of the heart at the first phase." This is repeated in the claim by saying "introducing a time delay into the first ECG; generating a phase-delayed ECG of the heart at a second phase based on the time-delayed first ECG." As illustrated in Figure 3B of Dam, a time delay is applied to a first ECG,  $t_d$ , before being fed into a comparator (illustrated in Figure 3A). Therefore, Dam introduces "a time delay into the first ECG to generate a phase-delayed ECG of the heart at the first phase." The signal at **101** of Figure 3A represents the portion of the circuit where the phase-delayed ECG resides. The comparator circuit is built such that when the time delay is chosen appropriately, the output of the comparator only results in one low to high transition. If the first phase is within a predetermined time of the second phase, this will occur and supply a correct output. If the first phase is not within a predetermined time of the second phase, more than one low to high transition will occur, thereby producing an error. See column 4, lines 35-40.

For at least the reasons above, the rejection of the claims as provided in the Office Action dated February 25, 2008 still stands and is repeated below.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1-2, 4-6, 8-10, 12-15, 17, 19-20 and 22-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dam et al. (4,192,318) in view of Cole, Jr. (US Patent No. 4,887,609). Dam discloses a method and apparatus for automatically locating the QRS portion of an electrocardiographic signal (EKG) and for generating a corresponding synchronization pulse (see Abstract). As illustrated in Figure 3A, an input signal is introduced to a circuit comprising a time delay and a comparator. The time delay is of a known value, and is demonstrated in Figure 3B as  $t_d$ . The comparator output signal is used to trigger a conventional pulse shaping network that creates the

Art Unit: 3737

synchronization pulse. While Dam provides for the localizing of the QRS portion of an EKG, Dam fails to provide for triggering an imaging device with the synchronization signal. Cole teaches an apparatus and method for filtering the EKG signal of a patient of unwanted signals, such as contamination signals produced by the use of nuclear magnetic resonance imaging (MRI) systems (see Abstract). Line 6 of Figure 2 illustrates a means for transmitting an enabling signal to MRI equipment, wherein the enabling signal can be used to synchronize the activation and deactivation of MRI equipment for use for sampling or collecting data (column 6, lines 23-39). It would have been obvious to one having ordinary skill in the art at the time the invention was made to incorporate the teachings of Cole, specifically the use of triggering a MRI system, with an automatically detected QRS portion of an EKG, as disclosed by Dam, because it is often desirable to use MRI equipment for data acquisition during specific periods within the QRS waveform of the patient's cardiovascular cycle (column 3, lines 65-67).

### ***Conclusion***

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

Art Unit: 3737

the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JAMES KISH whose telephone number is (571)272-5554. The examiner can normally be reached on 8:30 - 5:00 ~ Mon. - Fri..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Brian Casler can be reached on 571-272-4956. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Ruth S. Smith/  
Primary Examiner, Art Unit 3737

JMK